Information on the Microbiology of Eggs

by

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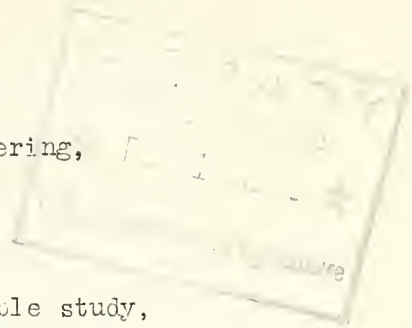

The microbiology of eggs has received considerable study, since much of the spoilage and deterioration encountered in fresh, stored or processed eggs is due to the growth of microorganisms.

A certain percentage of fresh eggs contain bacteria at the time they are laid, but most freshly laid eggs are sterile. The white contains a natural bactericidal product known as lysozyme, which no doubt accounts for much of the freedom from contamination. The egg is, however, a medium in which bacterial multiplication will take place rapidly, and for this reason it is necessary that eggs be handled rapidly and under as sanitary conditions as possible if high quality material is to be expected. The presence of large numbers of microorganisms is an indication of improper handling, and often of unsanitary conditions. This applies to all phases of the egg industry, from the handling of the flock to the final use of the eggs.

Microbiology of Egg Handling and Storage

The care and storage of shell eggs is important from the microbiological standpoint, in that the type of eggs handled and the type of storage govern to a large extent the quality of the final product. If the flock is handled in such a way as produce a large percentage of "dirties" or the eggs are subjected to improper treatment a much higher loss from bacterial spoilage is to be expected.

It has been found that fresh dirty eggs with sound shells frequently become contaminated, probably through the large pores of the shell. The humidity of the air in storage is an important factor in the bacterial penetration of the shell of dirty and washed dirty eggs. If properly washed, dried and stored there will be comparatively little loss in storage.

Spoilage in storage is due chiefly to bacteria. Bacteria increase in numbers very rapidly at room temperature or higher, and for this reason it is essential to place the eggs in cool storage as soon as possible. The main types of bad eggs found during and after storage are green white, digested whites, and white and black rots. As a rule, these types show decided chemical decomposition and are heavily infected with bacteria.

The molding of eggs in storage gives them an unsightly appearance, but this trouble can be avoided by proper handling and control of humidity. Eggs which have been packed in wet cases or fillers are likely to show molding in a relatively short time. It has also

been observed that reinfection does occur when old infected cases are used.

Microbiology of Egg Breaking

Rigid sanitary measures are essential in egg breaking plants if quality products are to be produced. Not only must the equipment be sterilized and the premises be sanitary in every respect, but care must be taken that bad eggs do not infect whole batches that have been broken out. For example, a large batch of good eggs can be made unfit for consumption by accidentally adding a musty egg through improper inspection. The musty odor and flavor in eggs infected with certain bacteria is very penetrating, and one musty egg may infect and scent an entire batch. The eggs should be broken separately, examined and smelled before adding to the main batch in the mixer. Bacteria increase in numbers by dividing into two individuals, and under ideal conditions this takes place every twenty to thirty minutes. It can be seen, therefore, why speed is essential in the handling of eggs and egg products and why contamination should be kept at a minimum. Freezing, drying or other processing should be done as rapidly as possible to keep down bacterial numbers, and thus prevent spoilage or loss of quality. Breaking equipment should be sterilized after a bad egg has come in contact with it, otherwise contamination will spread to eggs of good quality. The temperature of freezing storage should be kept low enough to keep the product solidly frozen at all times.

The main thing in the handling of eggs, from the bacteriological standpoint, is that to maintain quality, appearance and wholesomeness the hens should be properly cared for, and the eggs should be handled, stored or broken out under the best sanitary conditions. Proper temperature of storage, proper humidity and careful methods of handling will eliminate most of the trouble due to bacterial spoilage and deterioration.

A bulletin is now being prepared by the Department of Agriculture covering the various phases of egg production, storage, processing, and utilization.

There is attached a bibliography on the microbiology of eggs which may prove helpful.

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The Microbiology of Eggs*

A Selected Bibliography
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